

REMARKS

Claims 1-14 are pending in the present Application. Claims 3, 8 – 11, and 14 have been canceled, Claims 1, 2, 4 – 7, 12, and 13 have been amended, and Claims 15 – 24 have been added, leaving Claims 1, 2, 4 – 7, 12, 13, and 15 – 24 for consideration upon entry of the present Amendment. The Specification has been amended for clarity and consistency, and to correct typographical and grammatical errors. Figure 9 has also been amended to correct a labeling error. Support for this amendment can at least be found in Figure 8 as originally filed.

The claims have been amended for consistency of language, grammar, and to further claim the present invention. The new claims have been added to further claim the present invention. Support for the new claims and the claim amendments can be found in the specification and claims as originally filed, such as claim 1, and pages 18 - 19. No new matter has been introduced by these amendments. Reconsideration and allowance of the claims are respectfully requested in view of the above amendments and the following remarks.

Claim Rejections Under 35 U.S.C. § 112, First Paragraph

Claims 1-9 and 11-14 stand rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not described in the Specification in such a way as to reasonably convey to one skilled in relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Specifically, Examiner cites that the term “Class A” finish was not defined within the Specification. Applicants contend that the term “Class A” finish is a common term of art and understood by those of ordinary skill in the art. However, as an unnecessary limitation in the claims, the term “Class A” finish has been removed therefrom, thereby rendering the §112 1st Paragraph Rejection moot. Reconsideration and withdrawal of the rejections is respectfully requested.

Claim Rejections Under 35 U.S.C. § 112, Second Paragraph

Claim 10 stands rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, Examiner states that the phrase “a high quality finish appearance” is not adequately defined or specified within the Specification. Again, as with “Class A” finish, this is an unnecessary limitation that has been deleted from the claims, thereby rendering the rejection moot. Reconsideration and withdrawal of the rejections is respectfully requested.

Claim Rejections Under 35 U.S.C. § 103(a)

Claims 1-14 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over;

- a) BRUNELLE ET AL (US 6,307,507); or,
- b) WO 00/69945; or,
- c) BRUNELLE ET AL (US 6,265,522); or,
- d) BRUNELLE ET AL (US 6,291,589); or,
- e) BRUNELLE ET AL (US 6,294,647); or,
- f) BRUNELLE ET AL (US 2002/0039657); or,
- g) SHAKHNOVICH ET AL (US 6,410,620);
- h) SURIANO ET AL (US 6,528,065);
- i) in view of; WO 02/094560; and,
- j) in view of; MACGREGOR ET AL (US 6,136,441). Applicants respectfully

traverse this rejection.

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a *prima facie* case of obviousness, i.e., that all elements of the invention are disclosed in the prior art; that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references; and that the proposed modification of the prior art had a reasonable expectation of

success, determined from the vantage point of the skilled artisan at the time the invention was made. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); *In Re Wilson*, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970); *Amgen v. Chugai Pharmaceuticals Co.*, 927 U.S.P.Q.2d, 1016, 1023 (Fed. Cir. 1996).

The present application teaches and claims methods for manufacturing shaped composite articles. More specifically, a process is disclosed for forming a shaped composite article, comprising: thermoforming a laminate into a desired shape, wherein the laminate comprises a layer of an arylate polyester layer and a compatible resin layer, inserting the thermoformed laminate into a first mold half, disposing the heated reinforced resin material onto a second mold half, and compression molding the laminate to the heated reinforced resin material.

This process is capable of producing a shaped composite article with enhanced properties. The process first thermoforms the layered material, and then compression molds the thermoformed material with a composite resin, wherein the thermoformed material and the composite resin are disposed in different mold halves and contact one another when the mold is closed. This produces an article with an improved surface finish as compared to painted Automotive Horizontal Panels (comparing the painted industry standard finishes illustrated in FIG. 8 to the laminates produced via this method that are illustrated in FIG 9).

Placing the polyarylate/polycarbonate laminate 3 in the upper tool cavity permits separately controlling the temperature of the laminate 3 and the hot glass fiber/polycarbonate reinforced resin material 14 mat during closure of the tool and compression molding. The laminate 3 is maintained at about the softening point to minimize glass fiber read through and other surface imperfections. The tool is closed at which time the arylate/polycarbonate laminate 3 comes in contact with the preheated the glass fiber/polycarbonate reinforced resin material 14 mat. A pressure of about 500 and 5000 psi is applied. The glass fiber/polycarbonate reinforced resin material 14 mat material flows to fill the cavity and is subsequently cooled. The compression mold 12 is opened and the structural part is removed.

(Current Application, As Amended, Page 19, Lines 19 – 27)

BRUNELLE ET AL (US 6,307,507) teach and claim multilayer articles comprising a substrate layer and a coating layer. The reference also teaches a method of producing multilayer articles comprising applying a resorcinol arylate/organic carbonate block copolymer coating layer to a second layer. This is clearly taught in the specification:

...the present invention comprises multilayer articles comprising a substrate layer comprising at least one thermoplastic polymer, thermoset polymer, cellulosic material, glass, ceramic, or metal, and at least one coating layer thereon, said coating layer comprising a thermally stable polymer comprising resorcinol arylate polyester chain members substantially free of anhydride linkages linking at least two mers of the polymer chain. Optionally, the multilayer articles may further comprise an interlayer, for example an adhesive interlayer, between any substrate layer and any thermally stable polymer coating layer.

(Col. 18, Line 5 - 15)

Application of the at least one coating layer may be performed by solvent-casting. More preferably, application of said coating layer comprises fabrication of a separate sheet thereof followed by application to the second layer, or by simultaneous production of both layers, typically in a melt process.... co-injection molding, coextrusion, overmolding, blow molding, multi-shot injection molding, **and placement of a film of the coating layer material on the surface of the second layer followed by adhesion of the two layers**, typically in and injection molding apparatus; e.g., in-mold decorating, or in a hot-press.

(Col. 21, Lines 29 – 39; **emphasis added**)

WO 00/69945 teaches and claims multi-layer film articles comprising an engineering resin affixed to a layer of commodity resin wherein the engineering resin can

be directly affixed to the commodity resin, or a tie layer may be employed. The reference teaches various methods of production that entail production of a sheet, thermoforming the sheet, and injection molding either the commodity resin or the engineering resin thereon:

...Once such method includes the steps of providing an extruded sheet comprising an engineering resin layer, thermoforming a three-dimensional shell from the extruded sheet, **and injection molding** a commodity resin layer onto the thermoformed shell.

(Page 7, Lines 5 – 8; **emphasis added**).

BRUNELLE ET AL (US 6,265,522) teach and claim several methods of preparing polymers comprising resorcinol arylate polyesters that provide enhanced weatherability. BRUNELLE ET AL (US 6,291,589) teach and claim several methods of preparing polymers comprising resorcinol arylate polyesters that provide enhanced weatherability. BRUNELLE ET AL (US 6,294,647) teach and claim several methods of preparing polymers comprising resorcinol arylate polyesters that provide long term color stability and are virtually colorless. BRUNELLE ET AL (US 2002/0039657) teach and claim several methods of preparing polymers comprising resorcinol arylate polyesters that provide enhanced weatherability. SHAKHNOVICH ET AL (US 6,410,620) teach and claim several resinous compositions, methods of preparing the same, and multilayer articles manufactured therefrom, which employ photobleachable compounds that provide enhanced color stability under environmental ultraviolet conditions. All of these five references also disclose methods of manufacturing articles comprising resorcinol arylate polyesters, which can employ an interlayer for adhesive purposes.

Application of the at least one coating layer may be performed by solvent-casting. More preferably, application of said coating layer comprises fabrication of a separate sheet thereof followed by application to the second layer, or by simultaneous production of both layers, typically in a melt process. Thus there may be employed such methods as co-injection molding, coextrusion, overmolding, blow molding, multi-shot injection molding, **and placement of a film of the**

coating layer material on the surface of the second layer followed by adhesion of the two layers, typically in and injection molding apparatus; e.g., in-mold decorating, or in a hot-press.

(BRUNELLE ET AL (US 6,265,522) Col. 21, Lines 31 – 42; **emphasis added**)

SURIANO ET AL (US 6,538,065) teach and claim several methods for preparing a block copolyestercarbonates comprising resorcinol arylate polyesters, and multilayer articles and methods of manufacturing multilayer articles manufactured therefrom. The reference also discloses methods of manufacturing multilayer articles, which may comprise an intermediate layer.

In one embodiment application of at least one coating layer may be performed by solvent-casting. In another embodiment application of said coating layer comprises fabrication of a separate sheet thereof followed by application of the coating layer sheet to the second layer, or by simultaneous production of both layers, typically in a melt process. Thus there may be employed such methods as thermoforming, compression molding, co-injection molding, coextrusion, overmolding, blow molding, multi-shot injection molding, **and placement of a film of the coating layer material on the surface of the second layer followed by adhesion of the two layers**, typically in and injection molding apparatus; e.g., in-mold decorating, or in a hot-press.

(Col. 29, Lines 49 – 63; **emphasis added**)

WO 02/094560 teaches and claims multi-layer film articles comprising an engineering resin affixed to a layer of commodity resin to provide increased properties. The engineering resin can be directly affixed to the commodity resin, or a tie layer may be employed. The reference teaches various methods of production that entail production of a sheet, thermoforming the sheet, and injection molding either the commodity resin or the engineering resin thereon:

Referring to Fig. 1, a multi-layer film 20 is co-extruded through an extruder 22. As is better seen in the inset of Fig. 1, the multi-layer film 20 includes an engineering resin layer 24 tied to a commodity resin layer 26 by means of a ties layer.

(Page 8, Line 26 – Page 9, Line 3).

Referring now to Fig. 2, the next step in creating a multi-layer product 30 (See Fig. 4) typically involves thermoforming the multi-layer film 20 in to three dimensional shapes. ...After forming the three-dimensional shape 32, remaining flash portions 36 of excess film are removed and discarded. A resulting insert 38 is relatively thin... ...As shown in Fig. 3, the insert 38 is placed within the injection mold 40. Upon closing the injection mold 40, **melted commodity resins such as polyethylene, polypropylene, polystyrene, post-consumer regrind, or mixtures thereof are then introduced into the injection mold 40** to form the final multi-layer product 30.

(Page 15, Line 11 – Page 16, Line 16; **emphasis added**).

MACGREGOR ET AL (US 6,136,441) teach and claim several multilayer articles comprising cycloaliphatic polyesters, that provide improved weatherability, solvent resistance, and can be employed form film aesthetic purposes. The method includes:

In a preferred method for forming the multilayer articles of this invention a surface layer is formed by coextruding polycarbonate and cycloaliphatic as a composite film. The substrate is then injected onto the polycarbonate side of the composite during a subsequent molding operation. The resulting multilayer article comprises a substrate (in this case PC), an intermediate film of the same material as the substrate, e.g., polycarbonate, and a top layer of a cycloaliphatic polyester, such as PCCD. ...The articles of the invention can be formed by various processes: for instance; compression molding, multilayer blow molding, coextrusion of sheet or film, injection over molding, insertion blow molding, and other methods.

(Col. 29, Lines 49 – 63; **emphasis added**)

The Examiner relies upon WO 02/094560 to teach thermoforming, and on MACGREGOR ET AL to teach the compression molding against a preformed layer, admitting that “none of the other references explicitly claim the recited method of forming a shaped composite using thermoforming”. (Office Action, pages 6 - 7) As noted above, the present method does not merely claim thermoforming, but teaches and claims thermoforming a layered material, disposing the thermoformed material in one half of a mold and a composite material in another half of a mold, and compression molding. None of the references of record teach this process. For example, none of the references of record teach or suggest disposing the thermoformed material in one half of a mold and a composite material in another half of a mold, and then compression molding. Furthermore, none of the references of record teach that advantages can be attained by employing this process, namely an improved surface finish, as is discussed in the present application.

First, there is no teaching or suggestion to combine thermoforming and compression molding. Merely because compression molding can be used with a layer does not suggest or provide motivation to combine a thermoforming process with compression molding. It is not relevant what an artisan could do, but what an artisan would be motivated to do with an expectation of success. There is no motivation or expectation of success.

Secondly, there is no teaching or suggestion to compression mold where a thermoformed material is placed in one portion of the mold when the resin material is placed in another portion of the mold, and then the mold is closed. The references that discuss compression molding appear to teach placing both materials in the same mold half and then compression molding. At least the process of placing the thermoformed material in one portion of the mold when the resin material is placed in another portion of the mold, are not taught by any of the references. No *prima facie* case of obviousness has been established. Hence, alone, and in combination, these references fail to render obvious the claims of the present application. Reconsideration and withdrawal of this rejection are respectfully requested.

Claim Rejections Under NonStatutory Double Patenting

Claims 1-14 stands rejected under the judicially created doctrine of obviousness-type double patenting over:

- a) BRUNELLE ET AL (US 6,307,507); or,
 - b) PICKETT ET AL (US 6,610,409); or,
 - c) PICKETT ET AL (US 6,689,474);
- in view of BRUNELLE ET AL (US 2002/0039657);
and in view of WO 02/094560.

Applicants respectfully traverse the rejection. BRUNELLE ET AL (US 6,307,507), BRUNELLE ET AL (US 2002/0039657), and WO 02/094560, are discussed in detail above.

PICKETT ET AL (US 6,610,409) teach and claim several multilayer articles comprising resorcinol arylate polyesters that provide improved weatherability, solvent resistance, and can be employed form film aesthetic purposes.

In one embodiment application of the at least one coating layer may be performed by solvent-casting. In another embodiment application of said coating layer comprises fabrication of a separate sheet thereof followed by application to the second layer, or by simultaneous production of both layers, typically in a melt process. Thus there may be employed such methods as thermoforming, compression molding, co-injection molding, coextrusion, overmolding, blow molding, multi-shot injection molding, **and placement of a film of the coating layer material on the surface of the second layer followed by adhesion of the two layers**, typically in and injection molding apparatus; e.g., in-mold decorating, or in a hot-press.”

(Col. 23, Lines 42 – 55; **emphasis added**)

PICKETT ET AL (US 6,689,474) also teach and claim several multilayer articles comprising resorcinol arylate polyesters that provide improved weatherability, solvent resistance, and can be employed form film aesthetic purposes.

In one embodiment application of the at least one coating layer may be performed by solvent-casting. In another embodiment application of said coating layer comprises fabrication of a separate sheet thereof followed by application to the second layer, or by simultaneous production of both layers, typically in a melt process. Thus there may be employed such methods as thermoforming, compression molding, co-injection molding, coextrusion, overmolding, blow molding, multi-shot injection molding, **and placement of a film of the coating layer material on the surface of the second layer followed by adhesion of the two layers**, typically in and injection molding apparatus; e.g., in-mold decorating, or in a hot-press.

(Col. 26, Lines 52 – 64; **emphasis** is added)

As discussed above, the present method does not merely claim thermoforming, but teaches and claims thermoforming a layered material, disposing the thermoformed material in one half of a mold and a resin material in another half of a mold, and compression molding. None of the references, BRUNELLE ET AL (US 6,307,507), PICKETT ET AL (US 6,610,409), PICKETT ET AL (US 6,689,474), BRUNELLE ET AL (US 2002/0039657), nor WO 02/094560, teach this process, and therefore certainly fail to claim this process. For example, none of these references teach or suggest disposing the thermoformed material in one half of a mold and a resin material in another half of a mold, and then compression molding. Furthermore, none of the references of record teach that advantages can be attained by employing this process, namely an improved surface finish, as is discussed in the present application.

First, there is no teaching or suggestion to combine thermoforming and compression molding. Merely because compression molding can be used with a layer does not suggest or provide motivation to combine a thermoforming process with compression molding. It is not relevant what an artisan could do, but what an artisan would be motivated to do with an expectation of success. There is no motivation or expectation of success.

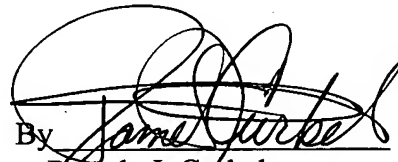
Secondly, there is no teaching or suggestion to compression mold where a thermoformed material is placed in one portion of the mold when the resin material is placed in another portion of the mold, and then the mold is closed. The references that discuss compression molding appear to teach placing both materials in the same mold half and then compression molding. At least the process of placing the thermoformed material in one portion of the mold when the resin material is placed in another portion of the mold, are not taught by any of the references. No *prima facie* case of obviousness has been established. Hence, alone, and in combination, these references fail to render obvious the claims of the present application. Reconsideration and withdrawal of this rejection are respectfully requested.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and withdrawal of the rejections and allowance of the case are respectfully requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130.

Respectfully submitted,

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